Dimensionality reduction and optimization for the inverse design of photonic integrated devices

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The widespread use of metamaterials and non-trivial geometries has radically changed the way photonic integrated devices are developed, opening new design possibility and allowing for unprecedented performance. Yet, these devices are often described by a large number of interrelated parameters which cannot be handled manually, requiring innovative design approaches for their effective optimization. In this invited talk, we will discuss the potentiality offered by the combination of machine learning dimensionality reduction and multi-objective optimization for the design of high performance photonic integrated device.

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